

WINNER

from MIDWAY

**The television skill game
that fits the mood of any scene.**

- Large Size Solid State T.V.
- Additional Adjustable Timer Control
- Dimensions: 26½" wide, 24" deep, 64" high



MIDWAY MFG. CO. — 3750 River Road—Schiller Park, Illinois 60176 phone: (312) 678-1350
DISTRIBUTED BY



MIDWAY MFG. CO.

3750 RIVER ROAD • SCHILLER PARK, ILLINOIS 60176

PHONE: AREA CODE 312 678-350

N E W R E L E A S E

Midway's "Winner"

Midway's new table tennis game, WINNER, will be in your distributor's showroom soon. This game is being built under license and with the co-operation of Atari, Inc., of Santa Clara, California, (Syzygy Engineered), the inventor and developer of the game.

Midway has reaped the benefits of months of location testing. WINNER lends itself to the sophisticated atmosphere of all locations. This unit has extra circuitry to allow the audience to view the match play on the location's television set, if desired.

The fascinating, competitive play has caught the eye of every age group, and has made it the most exciting game of the decade.

The outside dimensions are 26 1/2" wide x 23 7/8" deep x 64" high.

Sincerely,

MIDWAY MFG. CO.

Larry Berke
Larry Berke
Director of Sales

LB/r

GAME OVER

Energized when selected time is reached.

CREDIT

Energized via coin sws. to start game via Credit Button when start Jack is in top pos.

COIN

Energized via coin sws. or Credit Button dependent on start Jack pos.

**TIMER
ADJUSTMENT
JACK**

- OFF
- 7 MIN.
- 6 MIN.
- 5 MIN.

**POLARITY LAMP
CAUTION**

If Polarity Lamp is lit reverse TV. Set Line Cord in order to prevent electrical shock

WINNER "19" EQUIPMENT CHART

| COIL | PER GAME | APPLICATION |
|----------------|----------|---------------------------------------|
| M-33-1700 D.C. | 3 | Coin, Credit & Game-Over relay coils. |
| MT-37 | 1 | 60 Cycle Transformer |
| MT-38 | 1 | 50 Cycle Transformer |

PRINTED CIRCUITS

| | | |
|---------|---|-----------------|
| 567-904 | 1 | Game Logic |
| 567-907 | 1 | Game-Over Timer |
| 567-911 | 1 | Credit One-Shot |



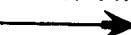
GAME
TIMER
P.C. 567-907

**START
CONTROL
JACK**

starts game
via

CREDIT
ONE-SHOT
UNIT
P.C. 567-911

- Credit Button
- Coin Switches



P.C. 567-904

WINNER LOGIC UNIT 18 MONTH
UNCONDITIONAL WARRANTY

WINNER 4-73

AS OF GAME #668

PACKARD BELL 19" TV

S E R V I C E B U L L E T I N

GAME: Winner 19

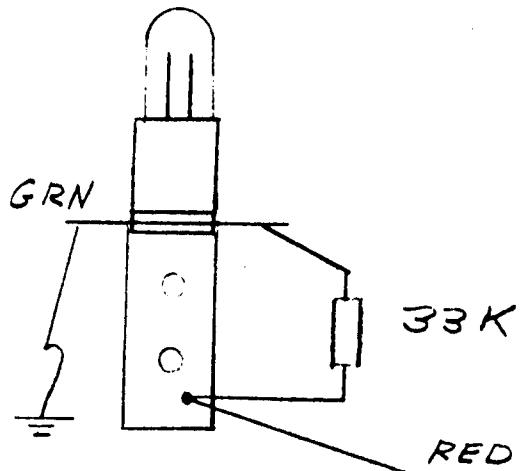
CONDITION:

Possible polarity lamp socket shorting causing damage to cable and logic P.C. 567-904.

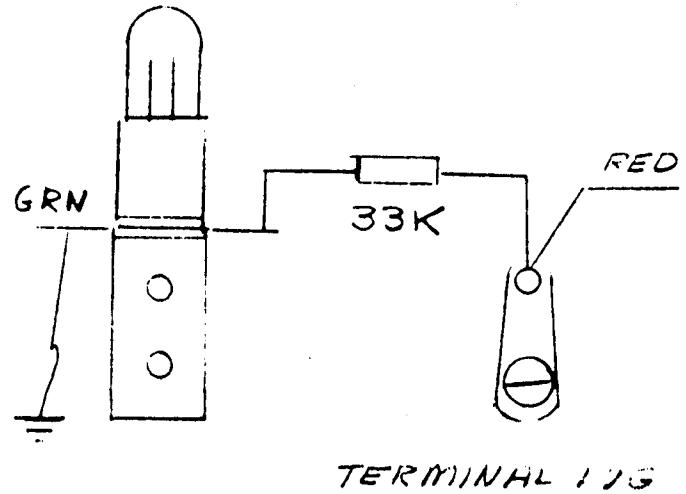
Please make the following modifications in games with Serial Numbers 675 thru 2600:

- 1.) Remove 33K resistor and red wire from lamp socket bracket.
- 2.) Solder 33K resistor and red wire to new terminal lug as shown.

OLD WIRING



NEW WIRING



NEON POLARITY LITE

General Instructions for WINNER

Installation:

The power is controlled by a switch located on top of the cabinet. Plug into A.C. only, 115 volts, 60 cycles.

Equipment Panel and Logic Unit:

Located in back box area and are easily serviced by removing back door.

Score Slide Switch:

Located on Logic Unit to end game at 11 or 15 points.

Timer Jack:

Located on equipment panel. This jack is provided as an optional feature and is adjustable from 5, 6, or 7 minutes. In the "OFF" position, the game will end when designated score is reached.

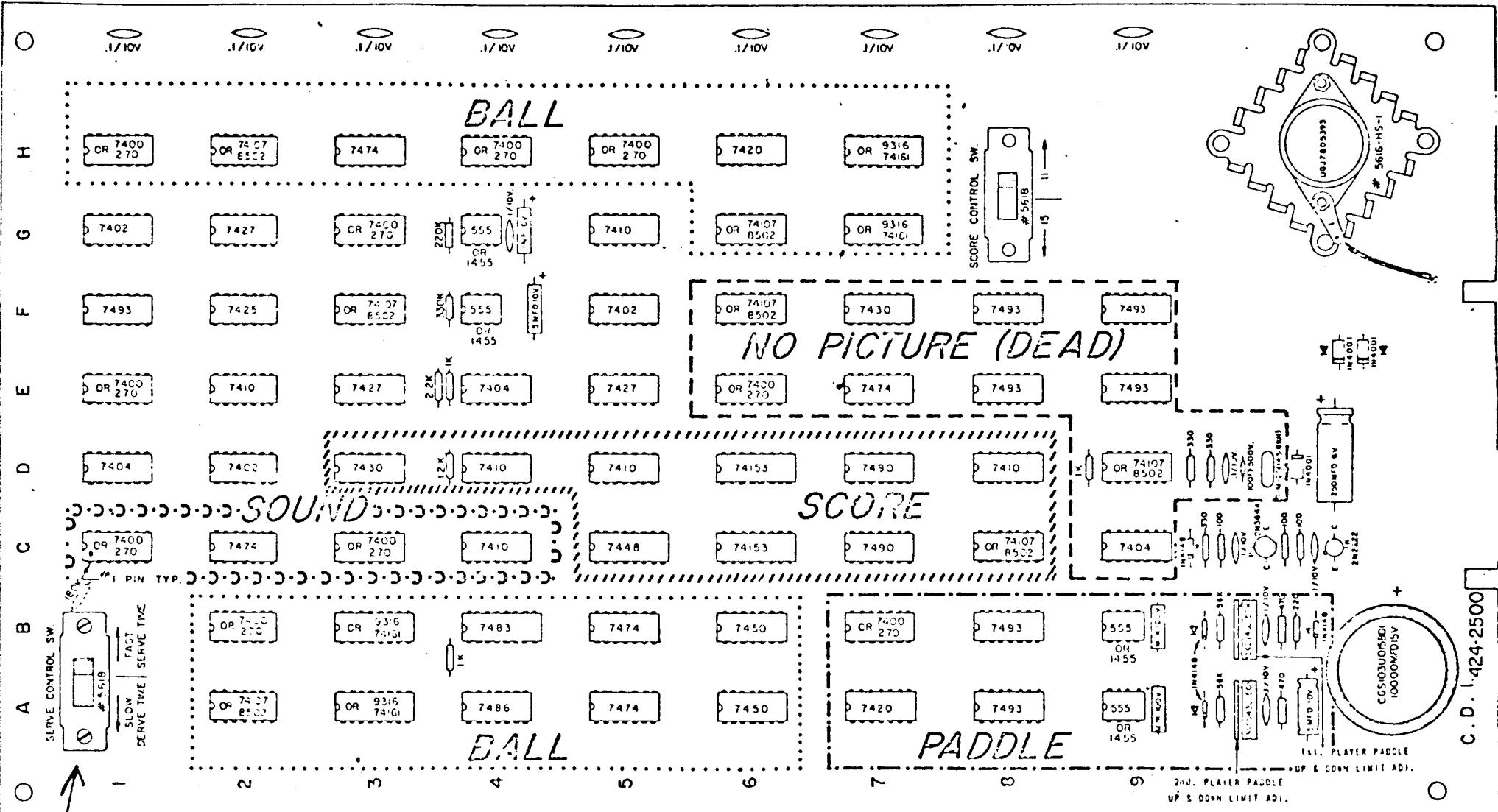
Volume Control:

Located on top of cabinet. To increase volume, rotate in a clockwise direction.

M I D W A Y M F G. C O.

3750 River Road

Schiller Park, Illinois



NOT IN WINNER

TROUBLE SHOOTING - WINNER LOGIC PC567-904

| <u>Location</u> | <u>Chip No.</u> | <u>Possible Trouble</u> |
|-----------------|-----------------|---|
| A2 | 74107 | No Ball |
| A3 | 9316 | Series of Balls - No Audio |
| A4 | 7486 | Distorted Video (Picture Rolls) |
| A5 | 7474 | No Ball |
| A6 | 7450 | Prevents ball from traveling downward |
| A7 | 7420 | Distorted Paddles |
| A8 | 7493 | No Right Paddle |
| A9 | NE555 | No Right Paddle |
| B2 | 7400 | No Paddles - No Audio - No Score Ball Travels from top to bottom at rapid rate |
| B3 | 9316 | Series of Distorted Balls - Distorted Audio |
| B4 | 7483 | Ball Serves Rapidly from bottom up |
| B5 | 7474 | No Ball - No Score |
| B6 | 7450 | Ball Travels from bottom up |
| B7 | 7400 | Stays in Game Over |
| B8 | 7493 | No Left Paddle - No Ball |
| B9 | NE555 | No Left Paddle - No Ball - No Audio |
| C1 | 7400 | No Audio |
| C2 | 7474 | Audio Distortion (Also no hit Audio) |
| C3 | 7400 | Distorted Display - No Audio |
| C4 | 7410 | Distorted Display - No Audio |
| C5 | 7448 | Distorted Series of Displays |
| C6 | 74153 | Scores Incorrect |
| C7 | 7490 | No Left Display |
| C8 | 74107 | First Score Kills Game |
| C9 | 7400 | Load |

| <u>Location</u> | <u>Chip No.</u> | <u>Possible Trouble</u> |
|-----------------|-----------------|---|
| D1 | 7404 | No Ball - No Score |
| D2 | 7402 | No Score Display - No Ball - Audio Distortion |
| D3 | 7430 | No Display |
| D4 | 7410 | Distorted Display |
| D5 | 7410 | Distorted Display |
| D6 | 74153 | Distorted Score |
| D7 | 7490 | No Right Display |
| D8 | 7410 | No Vertical Sync. - No Audio |
| D9 | 74107 | Dead (Picture Rolls) |
| E1 | 7400 | Fast Serve - No Score |
| E2 | 7410 | Distorted Left Display - No Right Display-No Ball |
| E3 | 7427 | Distorted Display |
| E4 | 7404 | Distorted Video (Picture Rolls) |
| E5 | 7427 | Distorted Display - First Score Kills Game |
| E6 | 7400 | Dead |
| E7 | 7474 | Dead |
| E8 | 7493 | Dead |
| E9 | 7493 | Dead Except Net (Picture Rolls) |
| F1 | 7493 | Fast Serve |
| F2 | 7425 | Distorted Series of Displays |
| F3 | 74107 | Distorted Audio and Net |
| F4 | NE555 | Stays in Game Over |
| F5 | 7402 | Distorted Video (Picture Rolls) |
| F6 | 74107 | Dead |
| F7 | 7430 | Dead |
| F8 | 7493 | Dead |
| F9 | 7493 | Dead |

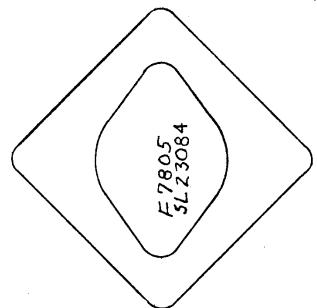
| <u>Location</u> | <u>Chip No.</u> | <u>Possible Trouble</u> |
|-----------------|-----------------|---|
| G1 | 7402 | No Video - Distorted Audio |
| G2 | 7427 | Dead Except Display |
| G3 | 7400 | Dead Except Display |
| G4 | NE555 | Distorted Audio |
| G5 | 7410 | Distorted Video (Picture Rolls) Distorted Audio - No Game Over |
| G6 | 74107 | No Ball |
| G7 | 9316 | No Ball |
| | | |
| H1 | 7400 | Ball Moves in Vertical direction only |
| H2 | 74107 | Ball Moves in Vertical direction only |
| H3 | 7474 | Distorted Paddles - No Score- No Game Over |
| H4 | 7400 | No Ball |
| H5 | 7400 | Distorted Video (Picture Rolls) |
| H6 | 7420 | Stay in Game Over |
| H7 | 9316 | No Ball - No Score |

WINNER LOGIC PC567-904

| Chip Number | Function |
|-------------|---|
| 7400 | Quad. two input nand-gate. |
| 7402 | Quad. two input nor-gate. |
| 7404 | Hex. inverter. |
| 7410 | Triple nand-gate. |
| 7425 | Dual four input nor-gate with strobe. |
| 7427 | Positive nor-gate. |
| 7430 | Eight input or-gate. |
| 7448 | B.C.D. to seven segment decoder. |
| 7450 | Expandable dual two input and-or inverter gate. |
| 7474 | J-K Flip-Flop. |
| 7483 | A four-bit binary full adder. |
| 7490 | Decade counter. |
| 74107 | Dual J-K Flip-Flop |
| 74153 | Dual 4 to 1 data selector multi-plexer. |
| 9316 | Four-bit counter low PWR. (up) |

| H | .1MF | .1MF | .1MF | .1MF | .1MF | .1MF | .1MF | .1MF | .1MF |
|---|-------|-------|-------|-----------------------------|------|-------|------|--------------------------|-------|
| G | 7400 | 74107 | 7474 | 7400 | 7400 | 7420 | 9316 | SLIDE SW | |
| F | 7402 | 7427 | 7400 | 220K NE 555 .1MF 15MF 15V + | 7410 | 74107 | 9316 | | 11 15 |
| E | 7493 | 7425 | 74107 | 330K NE 555 .1MF 15MF 15V + | 7402 | 74107 | 7430 | 7493 | 7493 |
| D | 7400 | 7410 | 7427 | 2.2K 1K 7404 | 7427 | 7400 | 7474 | 7493 | 7493 |
| C | 7404 | 7402 | 7430 | 1.2K 7410 | 7410 | 74153 | 7490 | 7410 | 74107 |
| B | 7400 | 7474 | 7400 | 7410 | 7448 | 74153 | 7490 | 74107 | 7404 |
| A | 7400 | 9316 | 7483 | 7474 | 7450 | 7400 | 7493 | NE 555 1.1MF 100V 1N4004 | + |
| - | 74107 | 9316 | 7486 | 7474 | 7450 | 7420 | 7493 | NE 555 1.1MF 100V 1N4004 | - |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |

COMPONENT SIDE



(2) 1N4004

8000 MF 2.5V

100Ω

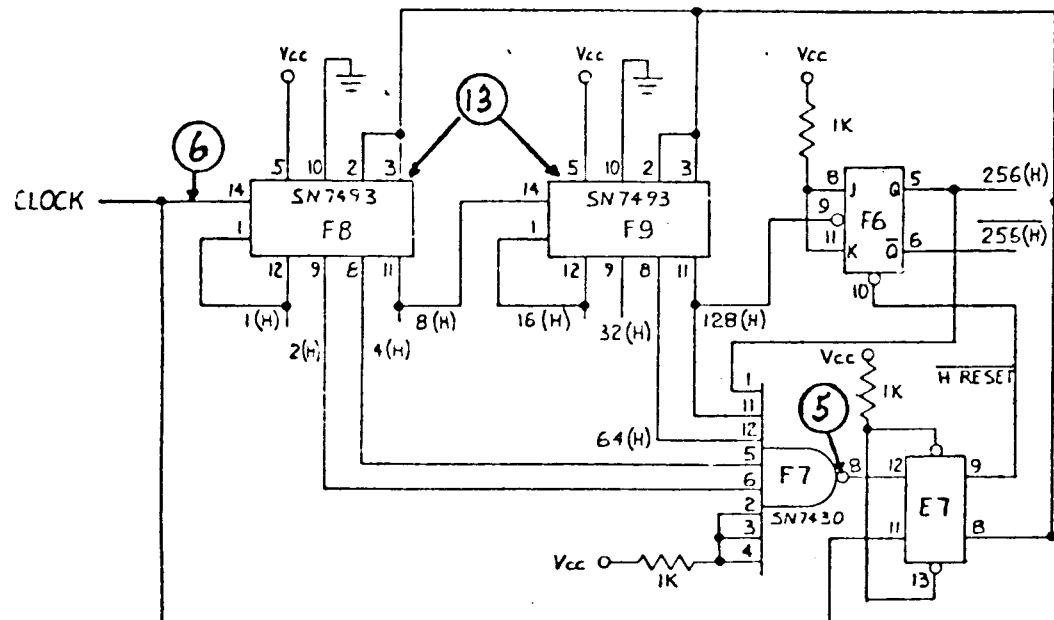
100Ω

100Ω

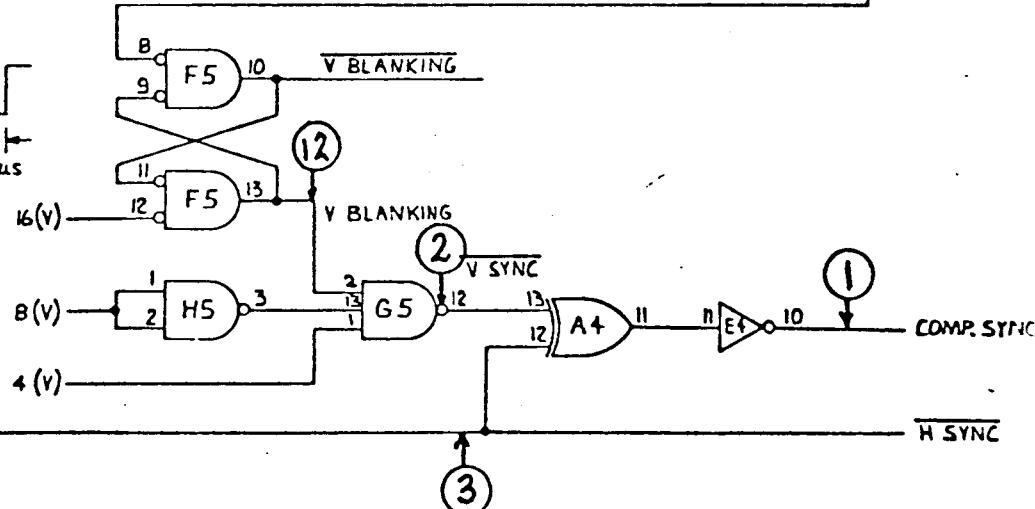
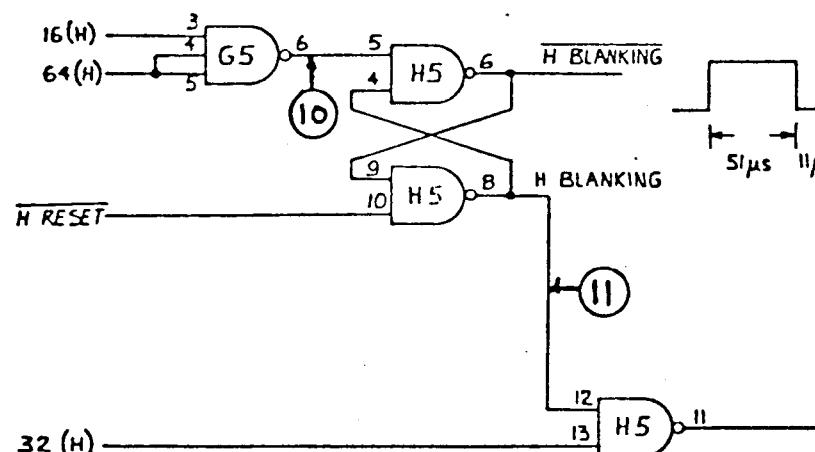
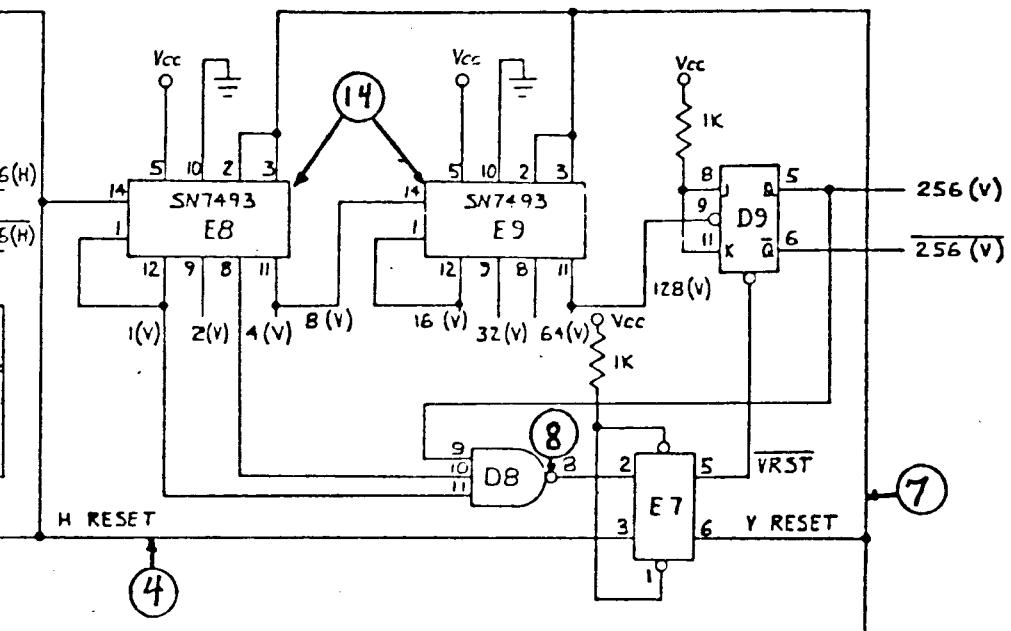
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HORIZONTAL SYNC $\div 454$

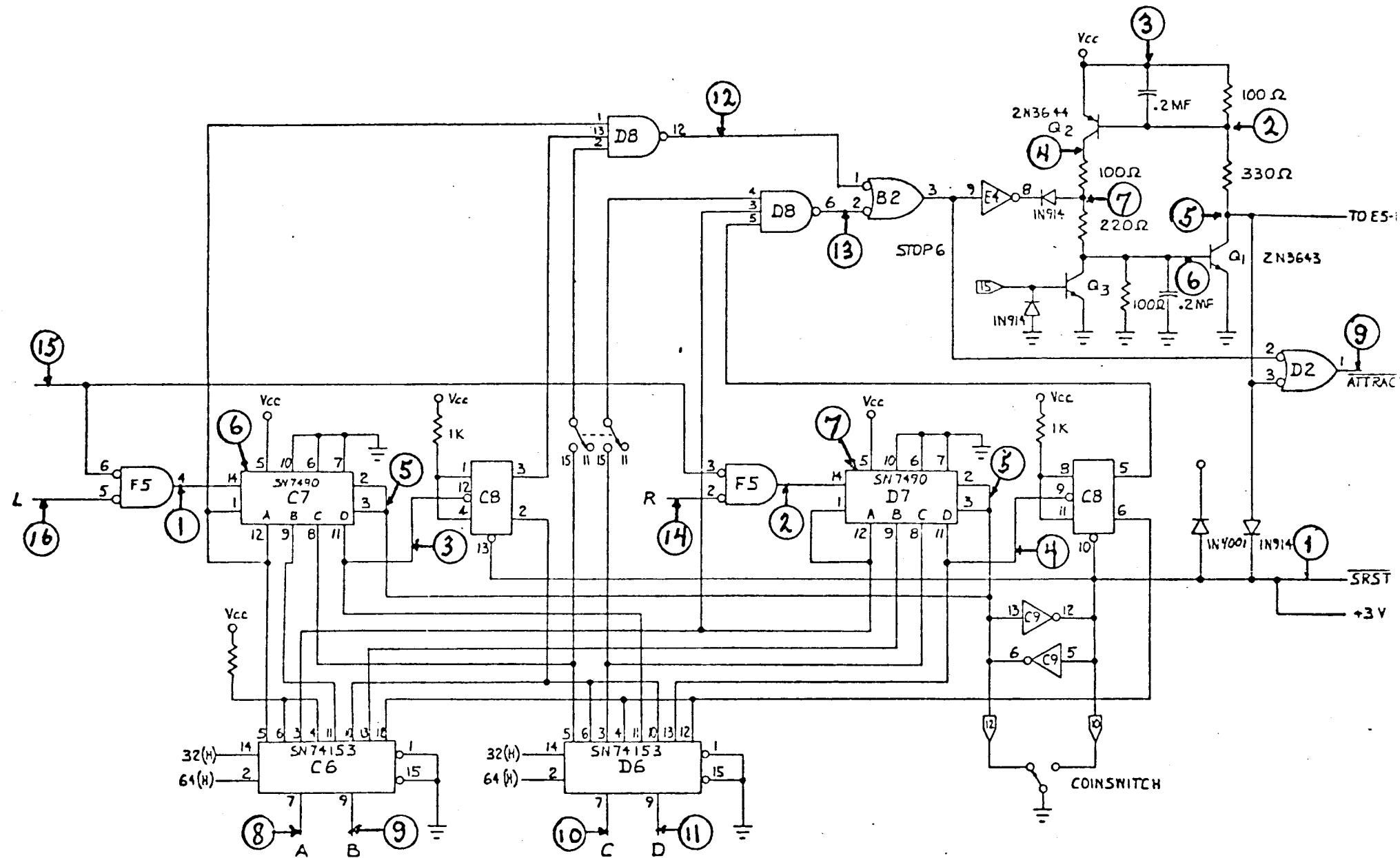


VERTICAL SYNC $\div 261$



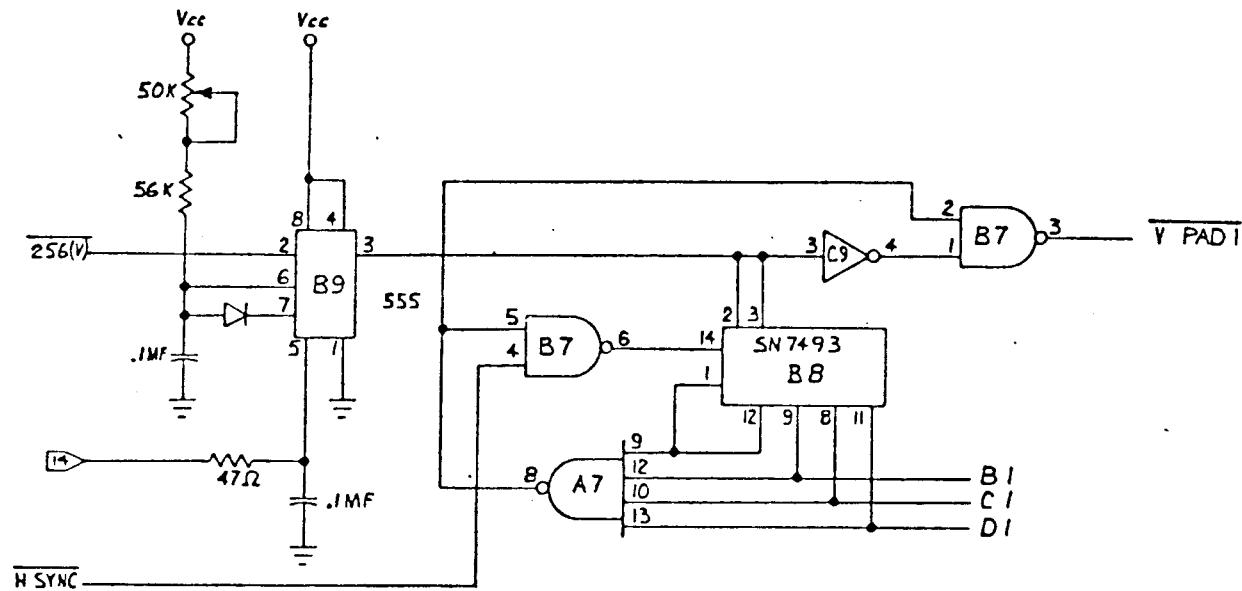
H & V TV SYNC

1

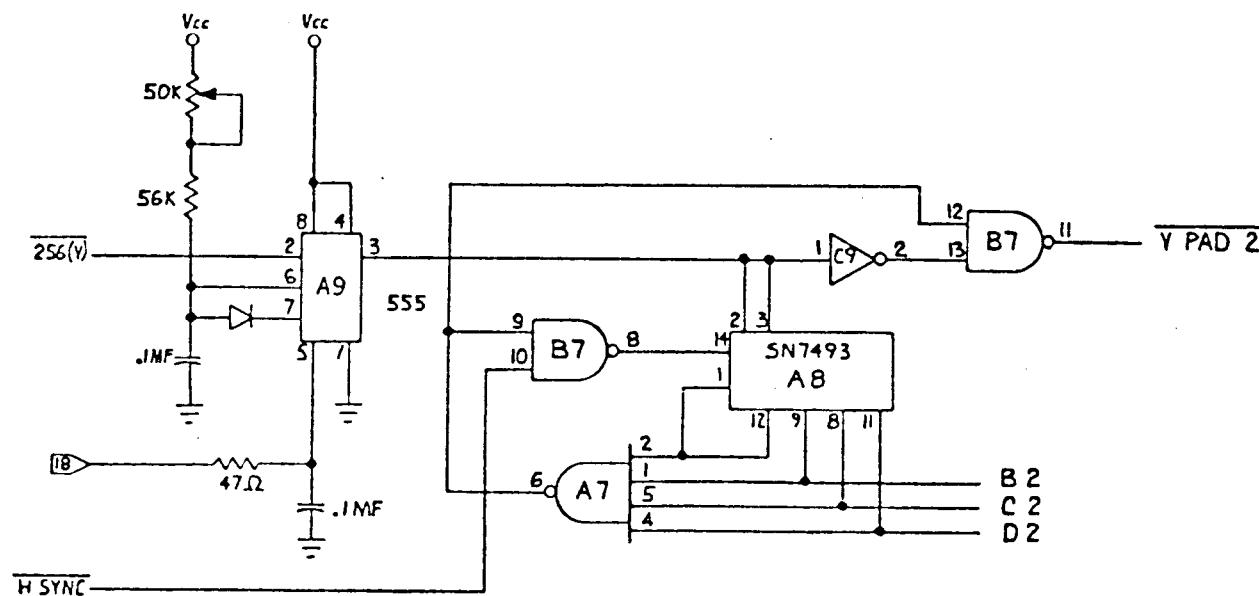


SCOPE COUNTER'S

(2)

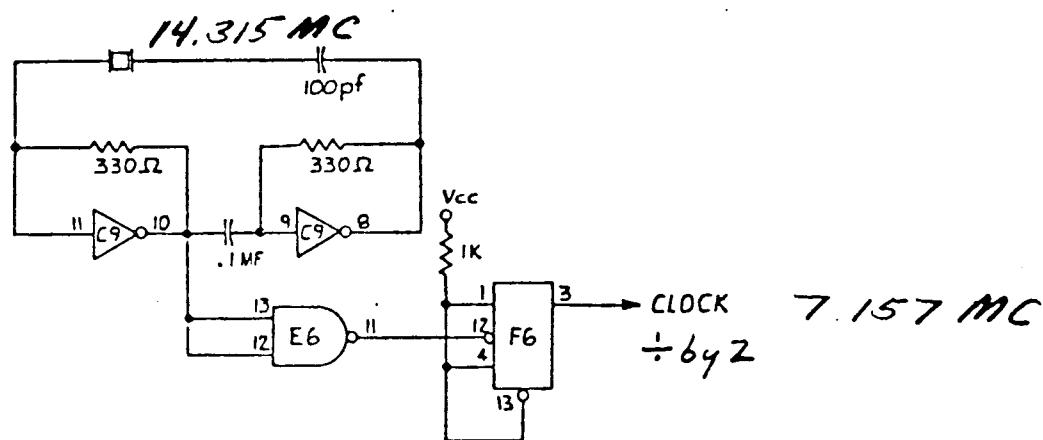
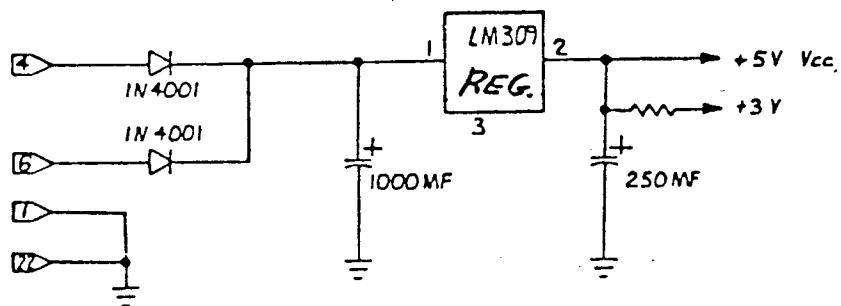


TWO 5K ROTS
0 - 5 Volts

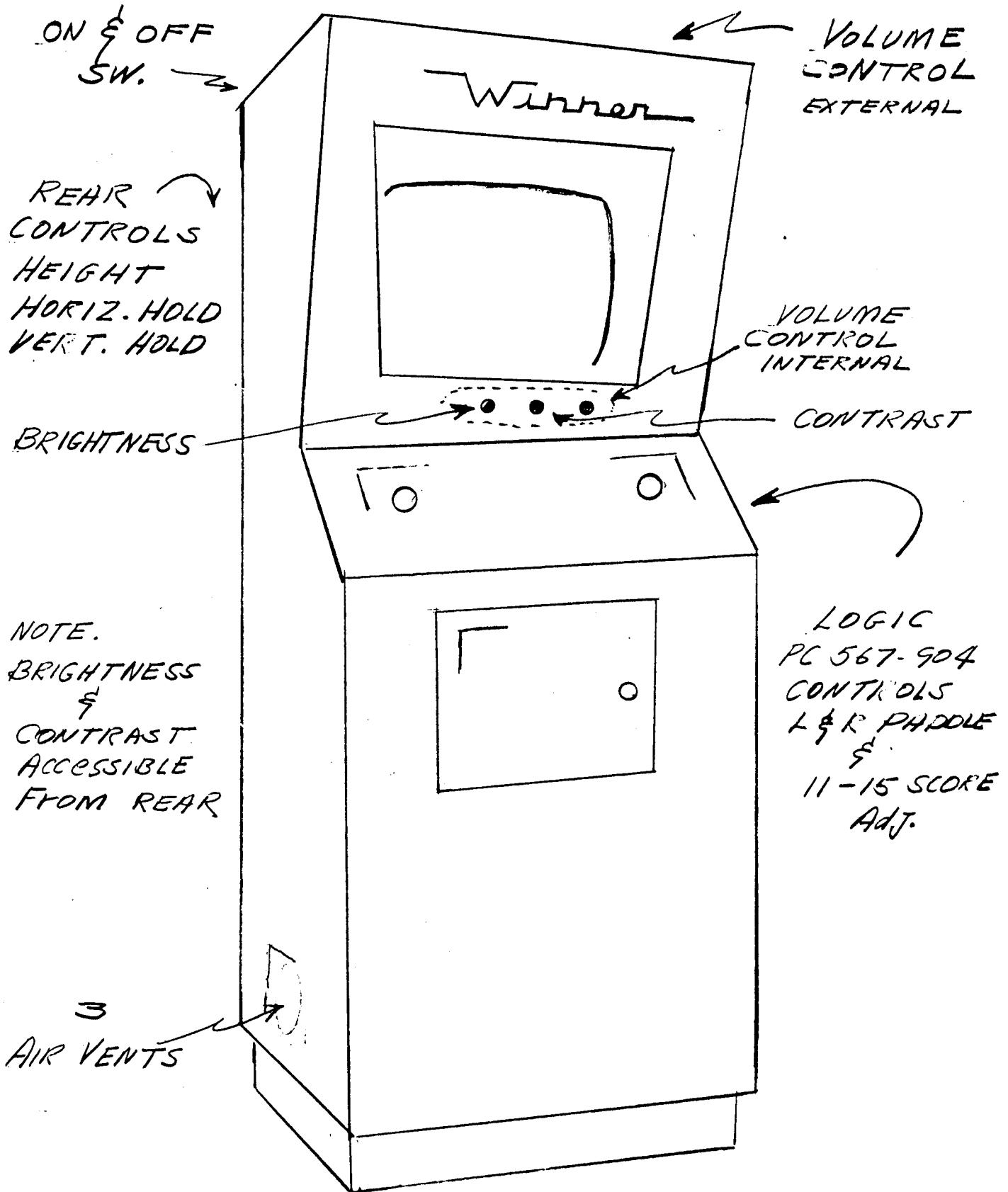


PAD 2 (E) 1 & K²





WINNER (2 PLAYER)
POWER & CLOCK



PANASONIC TV TR-216

W I N N E R

Trouble Shooting Game Reset

COMPLAINT:

Game fails to reset properly (T.V. good).

CHECK THE FOLLOWING:

- 1.) Blown 1 amp slo-blow fuse (115 VAC).
- 2.) Transformer and associated wiring (MT-37).
- 3.) Coin switch #1 and #2 de-energizes the game over relay (M 33-1700).
- 4.) Game over relay switch adjustment (Yellow-Green and White-Blue) or (Black-Green and Orange-Black).
- 5.) Coin switch #1 and #2 energizes the coin relay.
- 6.) Open coin relay coil (M 33-1700).
- 7.) Coin relay switch adjustment (Red and Green or Black).
- 8.) Game logic unit jack connection pins #2, #4, #6, #7, #10, #12, #15, and #22.
- 9.) Defective logic unit, (PC 567-904) or game timer unit (PC 567-907).

W I N N E R
= = = = =

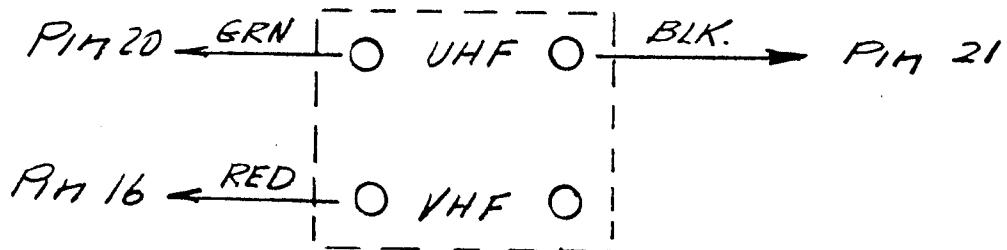
TR-216 T.V. Modification

MAKE THE FOLLOWING CHANGES:

- 1.) Remove UHF and VHF internal-external antenna leads (tape).
- 2.) Cut one side of R-124 resistor (100 ohm).
- 3.) Connect TP-4 terminal with Green lead wire to internal UHF antenna. (Left side #3).
- 4.) Connect E-3 terminal with Black lead wire to internal UHF antenna. (Right side #4).
- 5.) Connect Red wire to the White wire of volume control cable.
- 6.) Connect external volume control in series with T.V. speaker.

NOTE: Steps #1 through #4 eliminate T.V. picture.

Steps #5 and #6 alter T.V. sound.



T.V.
ANTENNA TERMINALS

VIEWED FROM REAR

W I N N E R

Packard Bell T.V. Modification 2N621BG ...

Factory Changes

- 1.) Remove all antenna leads and ground straps.
- 2.) Cut Brown and Brown-Yellow wires from on and off switch (splice and tape).
- 3.) Cut speaker leads and remove speaker (mounted externally).
- 4.) Disconnect 9 and 2 pt. jacks and remove tuner assembly.
- 5.) Cut green, yellow and ground wires at 9 pt. jack.
- 6.) Plug in 9 pt. adapter cable jack.
- 7.) Wire one end of added 3 wire cable to antenna terminals. Left side green then black and red (VHF & UHF).
- 8.) Solder green of 3 wire cable to terminal TP-3 (logic).
- 9.) Solder black of 3 wire cable to terminal link (ground).
- 10.) Solder red of 3 wire cable to yellow removed from 9 pt. jack (audio).
- 11.) Solder 47K ohm resistor across antenna terminals black and red.
- 12.) Cut one end of resistor R-119 (1.2k).
- 13.) Solder adapter cable black-yellow to 4 lug terminal strip with black.

Check T.V. set electrically in game.

December 4, 1973

POWER SUPPLY

Loss of 22V supply - suspect shorted Y402, open R404 or open R403.

Loss of 130V supply - suspect R403.

Loss of 140V supply - suspect R402.

VERTICAL CIRCUITS

1. Loss of vertical sweep - suspect Q205 first or Q202 second.
2. Bad vertical linearity or insufficient sweep - suspect Q204 first and Q203 second.
3. Uneven vertical sweep (poor linearity) check values of R223 or R226. Adjust rings on yoke.
4. Poor vertical sync. - be sure I.F. AGC is full counter clockwise.
5. Poor vertical linearity could be caused by bad yoke.

HORIZONTAL CIRCUITS

1. No horizontal sweep - suspect R263, R264, R265 or R266. Next suspect Q253. Always check Y253 when Q253 is defective. Suspect Y253 when there is no sweep.
2. If above checks are positive - suspect Q251 then Q252.
3. Poor sync. - be sure I.F. AGC is full counter clockwise.
4. Special horizontal circuit modification. To move picture 3/4 inch to left, put .01 capicator in parallel with C253. Readjust horizontal oscillator frequency with C251.

HIGH VOLTAGE CIRCUITS

1. Y254 is first suspect.
2. Look for trouble in horizontal circuits.

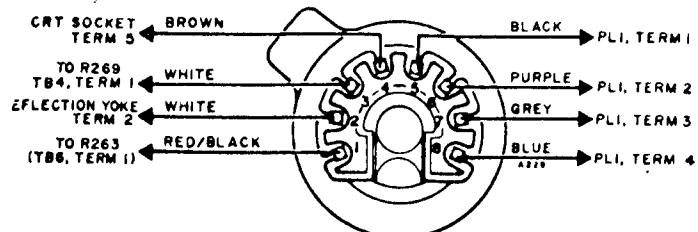
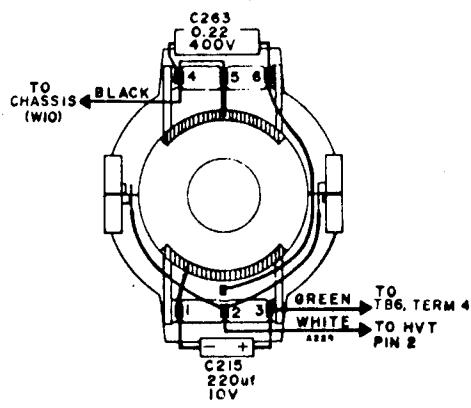
VIDEO CIRCUITS

1. No Video - suspect Q104 first, Q105 second.
2. Check Y102 if no picture.
3. Poor contrast, be sure I.F. AGC is full counter clockwise.

SOUND CIRCUITS

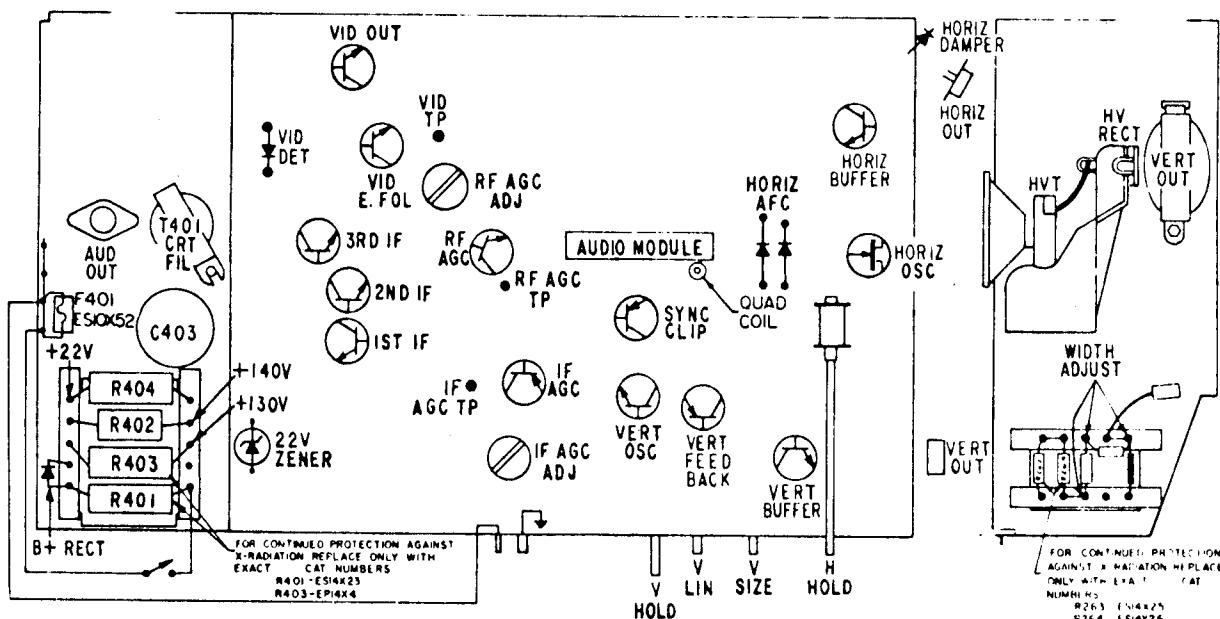
1. No sound - suspect Q301. If Q301 is defective, check R306 also.
2. No sound - suspect R306.
3. No sound - suspect T301.
4. No sound or distorted sound, replace a good audio module.

WIRING DIAGRAMS



Yoke

HVT



CHASSIS LAYOUT

CHASSIS REPLACEMENT PARTS LIST

| POTENTIOMETERS | | |
|---|--------|---------------------------------------|
| CAT. NO. | SYMBOL | DESCRIPTION |
| ES49X60 | R139 | Control-IF AGC , 2.5K |
| ES49X60 | R147 | Control-RF AGC , 2.5K |
| ES49X61 | R210 | Control-Triple |
| | R215 | Height , 85K |
| | R218 | Vertical Size , 16K |
| | | Vertical Lin., 2.5K |
| SPECIAL RESISTORS | | |
| ES41X5 | R232 | Thermistor Assembly |
| ES14X27 | R233 | Thermistor, 650 Ohms, 10% |
| ES41X5 | R261 | Thermistor Assembly |
| ES14X25 | R263 | Resistor-Wirewound, 27 Ohms, 10%, 5W |
| ES14X26 | R264 | Resistor-Wirewound, 75 Ohms, 10%, 5W |
| ES14X31 | R265 | Resistor-Wirewound, 27 Ohms, 10%, 2W |
| ES14X31 | R266 | Resistor-Wirewound, 27 Ohms, 10%, 2W |
| ES13X3 | R307 | VDR(180-200V) |
| ES14X23 | R401 | Resistor-Wirewound, 5 Ohms, 10%, 10W |
| EP14X4 | R403 | Resistor-Wirewound, 40 Ohms, 10%, 15W |
| ES14X24 | R404 | Resistor-Wirewound, 675 Ohms, 5%, 22W |
| CAPACITORS (DISC, CERAMIC, UNLESS NOTED) | | |
| # EU18X562 | C011 | 12pf, 10%, 500V, NPO |
| ET22X82 | C012 | 820pf, 10%, 500V |
| ES31X36 | C013 | 10mf, ELECTRO, +100 -10%, 16V |
| ES22X6 | C100 | 1000pf, 20%, 50V, HiK |
| # EP18X34 | C101 | 68pf., 5%, 500V, NPO |
| EU18X417 | C102 | 15pf, 5%, 500V, N750 |
| EP18X8 | C103 | 27pf, 5%, 500V, NPO |
| # EP18X58 | C104 | 15pf., 5%, 500V |
| ES18X43 | C106 | 10,000pf, GMV, 50V |
| EU22X91 | C107 | 560pf, 10%, 500V |
| ES18X43 | C108 | 10,000pf, GMV, 50V |
| ES22X6 | C109 | 1000pf, 20%, 50V, HiK |
| ES18X43 | C111 | 10,000pf, GMV, 50V |
| EU18X533 | C112 | 150pf, 5%, 500V, NPO |
| ES22X6 | C113 | 1000pf, 20%, 50V, HiK |
| ES22X6 | C114 | 1000pf, 20%, 50V, HiK |
| # ES18X58 | C115 | 3300pf., 20%, 50V |
| ES22X6 | C116 | 1000pf, 20%, 50V, HiK |
| EU18X541 | C117 | 82pf, 10%, 500V, NPO |
| EU18X417 | C118 | 15pf, 5%, 500V, N750 |
| EP18X47 | C119 | 10pf, 5%, 500V, NPO |
| ES22X6 | C120 | 1000pf, 20%, 50V, HiK |
| EP18X47 | C121 | 10pf, 5%, 500V, NPO |
| EP18X58 | C122 | 15pf, 5%, 500V |
| ET18X228 | C123 | 100pf, 10%, 500V, N750 |
| EP25X29 | C124 | .1mf, 20%, 50V, (Mylar) |
| EU18X533 | C125 | 150pf, 5%, 500V, NPO |
| ES31X42 | C126 | 10mf, ELECTRO, +100 -10%, 10V |
| ET22X82 | C127 | 820pf, 10%, 500V, HiK |
| EP22X4 | C128 | 220pf, 10%, 500V |
| # EP25X10 | C129 | 3300pf., 10%, 50V, Paper |
| ES25X18 | C130 | .1mf, 20%, 200V (Mylar) |
| ES31X42 | C131 | 10mf, ELECTRO, +100 -10%, 10V |
| ESS1X45 | C132 | 10mf, ELECTRO, +100 -10%, 25V |
| EP22X4 | C133 | 270pf, 10%, 500V |
| EP18X3 | C134 | 470pf, GMV, 1.4KV |
| EP18X53 | C135 | 100pf, 20%, 500V, HiK |

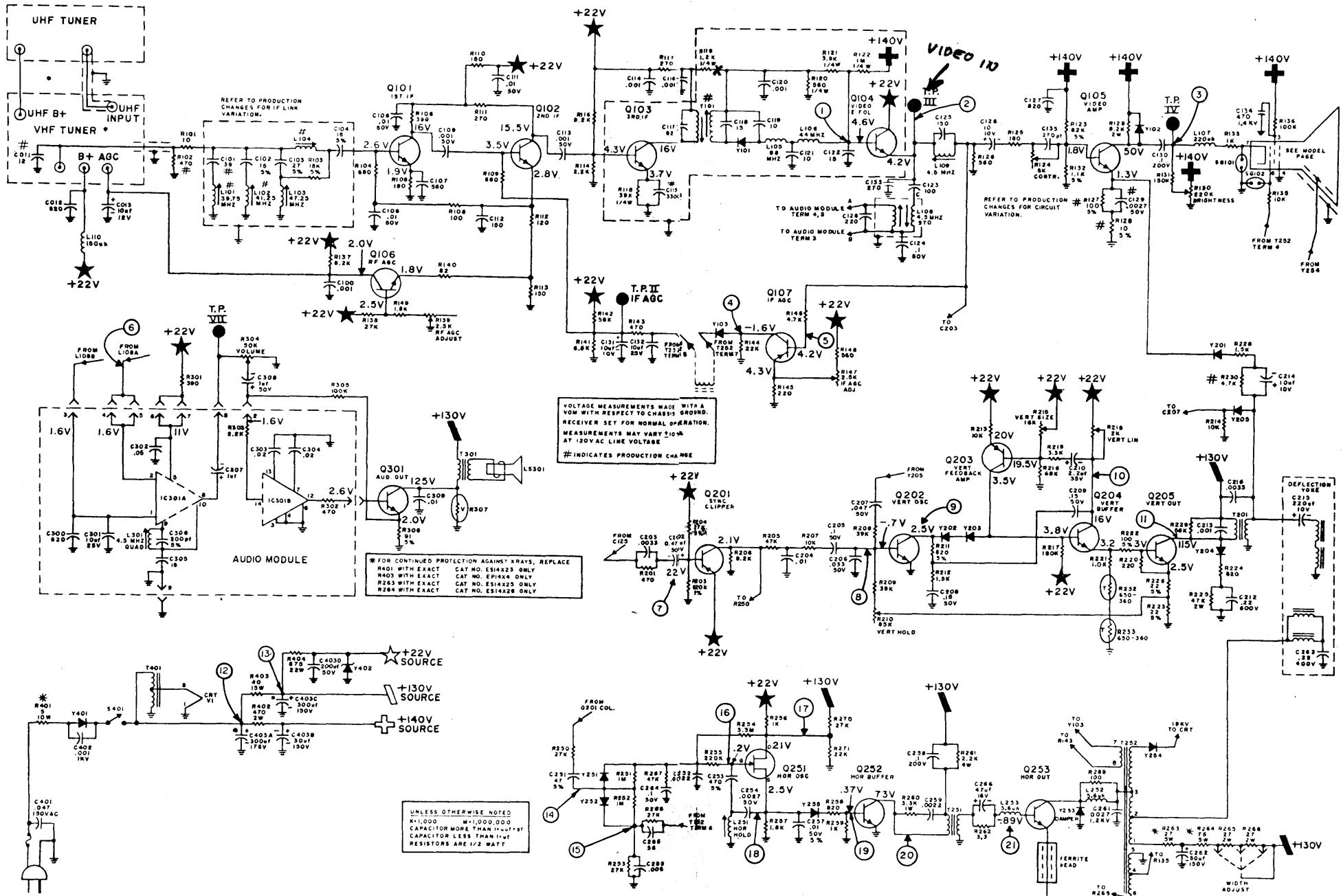
INDICATES PRODUCTION CHANGE

COMMON RESISTORS (CARBON, 1/2 WATT, 10%, IN OHMS, UNLESS NOTED)

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
|--------|---------------|--------|-------------|
| R001 | 100 | R205 | 47K |
| R101 | 10 | R206 | 8.2K |
| # R102 | 470 | R207 | 10K |
| R103 | 18K, 5% | R208 | 39K |
| R104 | 680 | R209 | 39K |
| R105 | 180 | R211 | 820, 5% |
| R106 | 390 | R212 | 1.5K |
| R108 | 100 | R213 | 10K |
| R109 | 680 | R214 | 10K |
| R110 | 150 | R216 | 68K |
| R111 | 270 | R217 | 200K, 5% |
| R112 | 120 | R219 | 3.3K |
| R113 | 150 | R220 | 220, 5% |
| R114 | 2.2K | R221 | 1K |
| R116 | 8.2K | R222 | 100, 5% |
| R117 | 270 | R223 | 22, 5% |
| R118 | 39K | R224 | 820 |
| R119 | 1.2K, 1/2 W | R225 | 47K, 2W |
| R120 | 560, 1/2 W | R226 | 22, 5% |
| R121 | 3.9K, 1/2 W | R228 | 1.5K |
| R122 | 1 meg., 1/2 W | R229 | 56K 1/2W |
| R123 | 82K, 5% | R230 | 4.7K |
| R125 | 180 | R250 | 27K |
| R126 | 560 | R251 | 1 meg. |
| R127 | 100, 5% | R252 | 1 meg. |
| R128 | 10 | R253 | 27K |
| R129 | 8.2K, 2W | R254 | 3.3 meg. |
| R131 | 150K | R255 | 220K |
| R132 | 1.1K, 5% | R256 | 1K |
| R133 | 1K | R257 | 1.8K |
| R135 | 10K | R258 | 820 |
| R136 | 100K | R259 | 1K |
| R137 | 8.2K | R260 | 3.3 meg. 1W |
| R138 | 27K | R262 | 3.3 |
| R140 | 82 | R267 | 47K |
| R141 | 6.8K | R268 | 27K |
| R142 | 56K | R269 | 100 |
| R143 | 470 | R270 | 27K |
| R144 | 22K | R271 | 22K |
| R145 | 220 | R301 | 390 |
| R146 | 4.7 | R305 | 100K |
| R148 | 560 | R306 | 91, 5% |
| R149 | 1.8K | R402 | 470 2W |
| R201 | 470 | R405 | 1.8K, 2W |
| R203 | 820K, 5% | | |
| R204 | 27K, 5% | | |

CHASSIS REPLACEMENT PARTS LIST

| CAPACITORS (DISC, CERAMIC, UNLESS NOTED) | | | TRANSISTORS & DIODES | | |
|---|--------|---|----------------------|--------|---|
| CAT. NO. | SYMBOL | DESCRIPTION | CAT. NO. | SYMBOL | DESCRIPTION |
| EP18X34 | #C136 | 68pf., 5%, 500V, NPO | ES15X104 | Q101 | Transistor - 1st I.F. |
| EP18X58 | #C137 | 15pf., 5%, 500V | ES15X105 | Q102 | Transistor - 2nd I.F. |
| ES22X6 | C201 | 1000pf, 20%, 50V, HiK | ES15X106 | Q103 | Transistor - 3rd I.F. |
| ES31X40 | C202 | .47mf, ELECTRO, +150 - 10%, 50V | EP15X1 | Q104 | Transistor - Video Emitter Follower |
| ES22X3 | C203 | 3300pf, 20%, 500V | ES15X107 | Q105 | Transistor - Video Amp., w/Spacer |
| EP18X26 | C204 | 10,000pf, 20%, 500V | EP15X1 | Q106 | Transistor - RF AGC |
| EP25X29 | C205 | .1mf, 20%, 50V (Mylar) | ES15X90 | Q107 | Transistor - I.F. AGC |
| ES25X9 | C206 | .033mf, 10%, 50V (Mylar) | ES15X90 | Q201 | Transistor - Clipper |
| ES25X17 | C207 | .047mf, 50V, (Mylar) | EP15X1 | Q202 | Transistor - Vertical Oscillator |
| ES25X21 | C208 | .15mf, 10%, 50V, (Mylar) | ES15X90 | Q203 | Transistor - Vertical Feedback |
| | C209 | | EP15X1 | Q204 | Transistor - Vertical Buffer |
| ES31X41 | C210 | 2.2mf, ELECTRO, +150 - 10%, 50V | ES15X91 | Q205 | Transistor - Vertical Output, w/Insulator |
| COMMON | C212 | .22mf, 10%, 600V (Molded) | ES15X92 | Q251 | Transistor - Horizontal Oscillator |
| EU22X117 | C213 | 1000pf, 20%, 500V, SSHK | ES15X93 | Q252 | Transistor - Horizontal Buffer |
| ES31X42 | C214 | 10mf, ELECTRO, +100 - 10%, 10V | ES15X94 | Q253 | Transistor - Horizontal Output, w/Insulator |
| ES31X39 | C215 | 220mf, ELECTRO, +100 - 10%, 10V | ES15X95 | Q301 | Transistor - Audio Output, w/Insulator |
| EU22X127 | C216 | 3300pf, 10%, 500V | EP16X3 | Y101 | Diode - Video Detector |
| EU18X537 | C251 | 47pf, 10%, 500V, N330 | ES16X30 | Y102 | Diode - Video Clamping |
| EU22X129 | C252 | 2200pf, 10%, 500V, SSHK | ES16X27 | Y103 | Diode - AGC Coupling |
| ES20X2 | C253 | 470pf, 5%, 500V, Mica | ES16X27 | Y201 | Diode - Vertical Blanking |
| ES25X20 | C254 | 2700pf, 10%, 50V, (Mylar) | EP16X3 | # Y202 | Diode - Vertical Coupling |
| EP22X7 | C255 | 5000pf, 10%, 500V | ES16X27 | Y203 | Diode - Vertical Coupling |
| ES25X22 | C257 | .01mf, 5%, 50V, (Mylar) | ES57X12 | Y204 | Diode - Vertical Damper |
| ES25X18 | C258 | .1mf, 20%, 200V, (Mylar) | ES16X27 | Y205 | Diode - Vertical Feedback |
| EU22X129 | C259 | 2200pf, 10%, 500V, SSHK | ES16X27 | Y251 | Diode - Horizontal AFC |
| ES26X1 | C261 | 2700pf, 5%, 1.2KV (Molded) | ES16X27 | Y252 | Diode - Horizontal AFC |
| ES31X44 | C262 | 50mf, ELECTRO, +100 - 10%, 150V | ES16X28 | Y253 | Diode - Horizontal Damper |
| ES26X2 | C263 | .22mf, 10%, 400V, (Molded) | ES57X11 | Y254 | Rectifier - High Voltage |
| EP25X29 | C264 | .1mt, 20%, 50V (Mylar) | ES16X27 | Y255 | Diode - Horizontal Coupling |
| ET18X329 | C265 | 56pf, 5%, 500V, N750 | ES57X12 | Y401 | Rectifier - B+ |
| ES31X43 | C266 | 47mf, ELECTRO, +100 - 10%, 16V | ES16X29 | Y402 | Diode - 22 Volt Zener |
| EP31X14 | C308 | 1mf, ELECTRO, +150 - 10%, 50V | | | |
| ET22X22 | C309 | 10,000pf, 20%, 500V | | | |
| EP25X28 | C401 | .047mf, 20%, 600V, (Mylar) | | | |
| EP18X4 | C402 | 1000pf, +80 - 20%, 1KV | | | |
| ES31X38 | C403A | 300mf, ELECTRO, 175V | | | |
| | C403B | 30mf, ELECTRO, 150V | | | |
| | C403C | 300mf, ELECTRO, 150V | | | |
| | C403D | 200mf, ELECTRO, 50V | | | |
| COILS AND TRANSFORMERS | | | | | |
| CAT. NO. | SYMBOL | DESCRIPTION | CAT. NO. | SYMBOL | DESCRIPTION |
| EP36X92 | #L101 | Coil-Shaping | EP8X6 | | Anode Lead |
| ES36X83 | L102 | Coil-41.25 MHz Trap | ES3X30 | | Clip - Transistor Mtg. (Q205) |
| EP36X13 | L103 | Coil-47.25 MHz Trap | ET5X27 | | Clip - Yoke |
| ES36X109 | #L104 | Coil - Link Series | EP12X84 | | Core Half - H. V. Transformer |
| ES36X61 | L105 | Coil-88 MHz Choke, 10uh + 20% | ES1X29 | | Eyelet - H. V. Rectifier, Brass, w/Spring |
| ES36X84 | L106 | Coil-44 MHz Trap, 35.7uh | ET3X651 | | Fastener - Nylon, Transistor Socket |
| ES36X82 | L107 | Coil-220uh Peaking | EP10X52 | | Fuse - 4 Amp, Fast-Blow, Pigtail, 250V (F401) |
| ES36X86 | L108 | Coil-Sound Take-Off | ES60X3 | | Heat Sink - Q105 |
| ES36X87 | L109 | Coil-4.5 MHz Trap | ES60X4 | | Insulator - Horiz. Output Transistor (Q253) |
| EP36X17 | L110 | Coil-150uh Peaking Coil | EP38X6 | | Interlock Board - AC Power |
| ES36X88 | L251 | Coil-Horizontal Oscillator | ES75X1 | | Module - Audio |
| ET36X536 | L252 | Coil-5.6uh | ET1X140 | | Screw - Hex Hd., No. 8-15 x 1/2" |
| ET36X536 | L253 | Coil-5.6uh | EP1X7 | | Terminal Board Mounting |
| S76X6 | | Deflection Yoke | | | Screw - Hex Hd., No. 8-15 x 3/8", |
| S56X7 | T101 | Transformer - Video Detector | | | End Panels to Chassis |
| S64X11 | T201 | Transformer - Vertical Output | ES69X6 | | Shaft - Nylon, Horizontal Hold |
| S64X12 | T251 | Transformer - Horizontal Buffer | ES34X11 | | Socket - Transistor (Q301) |
| S77X12 | T252 | Transformer - High Voltage | ES34X10 | | Socket - Transistor (Q253) |
| | | (Complete Asm. Less Rectifier and Anode Lead) | ES34X12 | | Socket - CRT |
| S64X13 | T301 | Transformer - Audio Output | ES34X15 | | Socket - Transistor (Q205) |
| S64X10 | T401 | Transformer - CRT Filament | ES34X13 | | Socket - Transistor (Q201, 203, 204, 251) |
| | | | ES34X14 | | Socket - Audio Module (Left & Right Halves) |
| | | | ES41X4 | | Spark Gap - (SG 101, 102) |
| | | | ES38X9 | | Terminal Board - Five Terminals, R263, 264 |
| | | | | | Mounting |
| | | | ET2X223 | | "U" Bolt - H. V. Transformer |



MAIN CHASSIS SCHEMATIC DIAGRAM

WINNER "19"

GAME NO. 567 4-6-73

MIDWAY MFG. CO.
3750 RIVER RD.
SCHILLER PK., ILL., U.S.A.

| WIRE COLOR CODE | | SWITCH SYMBOLS |
|---|--------------|---|
| B=BLACK | O=ORANGE | ↑ "NORMALLY OPEN" ↓ CLOSED WHEN ENERGIZED. |
| BLU=BLUE | R=RED | ↓ "NORMALLY CLOSED" ↑ OPEN WHEN ENERGIZED. |
| BR=BROWN | W=WHITE | ↔ MAKE & BREAK |
| G=GREEN | Y=YELLOW | ○ MOTOR CAM SWITCH |
| <u>EXAMPLE:</u> G-R INDICATES GREEN WIRE WITH RED TRACER | | ± .1 MFD. CAPACITOR |
| <u>ABBREVIATIONS USED</u> | | |
| J=JUMPER | SW=SWITCH | |
| RE=RELAY | POS=POSITION | |
| SU=STEP UP UNIT | | |
| OSC=OSCILLATING | | |

